Feasibility of a Palmtop-Based Interactive Education to Promote Patient Safety

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INTRODUCTION

Institute of Medicine defines "patient safety" as a set of measures taken by healthcare professionals to prevent adverse outcomes from medical errors. Kohn[1] estimated that medical errors are likely to result in a death of 44,000 to 98,000 people in U.S. hospitals each year, making it almost the fifth leading cause of death. The costs of medical errors, made by healthcare professionals, amount to $29 billions annually. Recent studies showed that current system of medical training and continuous education has limited capability in promoting and sustaining awareness of patient safety and medical error issues. Use of Personal Digital Assistants (PDA) has been increasingly widespread among clinical students and residents. Despite significant improvement in PDA functionality, current literature does not provide systematic assessment of potential use of hand-held computing for interactive clinician education. To address these issues, we assessed the feasibility of a PDA-based interactive multimedia tool aimed to provide self-paced patient safety education for clinicians.

AIMS

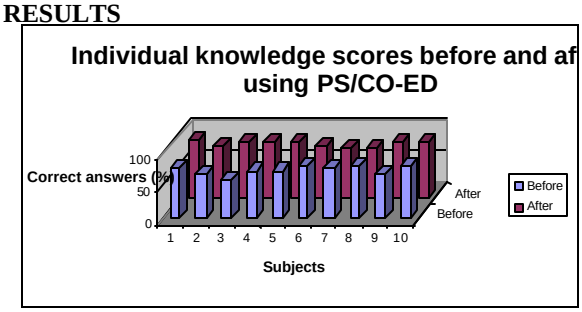
1. To develop an interactive clinician education toll utilizing modern features of palmtop-based computing to promote patient safety.
2. To evaluate the computer-assisted education in clinical residents and fellows using both quantitative and qualitative analysis.

METHODS

System Design and Development: An interactive clinician education tool (patient safety and medical errors issues) was designed and implemented using COmputer-assisted EDucation (CO-ED)[2] system. CO-ED is a universal authoring tool supporting rapid development of interactive multimedia education programs utilizing modern features of palmtop computing[2]. The educational curriculum for CO-ED can be continuously updated by downloading the most recent version of the curriculum from an institutional web site or from dedicated workstations. The patient safety curriculum for CO-ED (PS/CO-ED) provides an overview of the basic facts about patient safety, minimization of diagnostic errors, medication errors, and the clinical procedural errors.

Study Protocol for the evaluation of PS/CO-ED: We conducted a baseline assessment of subjects' familiarity with patient safety and medical errors issues using a knowledge questionnaire containing twenty-four questions, which were drawn from the content of patient safety curriculum. After the baseline assessment, the study subjects, represented by a convenience sample of ten clinical residents and fellows, were asked to use PS/CO-ED and to complete the patient safety course. After the patient safety course was completed, the subjects' knowledge has been evaluated again using the same knowledge questionnaire. In addition, the subjects completed an attitudinal survey and qualitative interview. Attitudinal survey included fifteen questions assessing subjects' attitudes and concerns regarding content and user interface. The qualitative analysis was based on semi-structured in-depth interviews aimed to evaluate the sufficiency of the content of the patient safety curriculum, user friendliness of the interface, individual concerns and relevancy to the subjects' personal objectives.

RESULTS



The figure represents a comparison of patient safety knowledge measured in the subjects before and after using PS/CO-ED. The knowledge scores were represented as percentages of a maximal score. Comparison of the knowledge scores using paired t-test demonstrated statistically significant increase in subject knowledge ($p<0.01$) after using PS/CO-ED. Attitudinal surveys were analyzed by total score (TS) calculation represented as a percentage of a maximal possible score. The mean TS was 74.5±7.1%. None of the subjects had TS less than 65% and in half of the subjects TS was higher than 75%. Analysis of the semi-structured in-depth interviews showed strong support of the study subjects in using PDA as an educational tool, and high acceptance of PS/CO-ED user interface. We concluded that PDA has a significant potential as a tool for clinician education.

ACKNOWLEDGEMENT

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